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the radially extending inward end portion 2*d* facing the first section 1*a* of the crankshaft. Then, the radial surface 5*g* is processed based on the assembled condition between the axially extending inward end 2*c* and the second section 1*b* and/or between the radially extending inward end portion 2*d* and the first section 1*a* to make the axial run-out of the radial surface 5*g* no more than 0.1 mm.

By using the above-noted manner, the radial surface 5*g* is easily and precisely processed to make the amount of the axial run-out no more than 0.1 mm.

FIG. 4 is a graph of axial run-out amount of flywheel (radial surface 5*g*) versus fore and aft vibration of vehicle floor showing a result of experiments. It is confirmed that the fore and aft vibration of the vehicle floor which does not give a uncomfortable feeling to a human body is normally no more than 0.1 G (gravitational acceleration). As can be seen from FIG. 4, a fore and aft vibration of the vehicle floor is substantially in direct proportion to an amount of the axial run-out of the radial surface 5*g*, and the fore and aft vibration becomes no more than 0.1 G when the axial run-out becomes no more than 0.1 mm. Accordingly, by making the amount of the axial run-out no more than 0.1 mm as in this embodiment, the fore and aft vibration can be made no more than 0.1 G.

As understood from the above description, in this second embodiment, when the crankshaft 1 is rotated, the flywheel body 5 is ensured to rotate with the crankshaft 1 by means of the large circumferential rigidity of the elastic plate 2. Since the amount of the axial run-out of the radial surface 5*g* is no more than 0.1 mm, the engagement between the radial surface 5*g* and the clutch facing 8 is performed quite smoothly, so that the fore and aft vibration does not exceed 0.1 G. Accordingly, the driving power is transmitted from the engine to the transmission without giving the uncomfortable feeling to the human body.

It is to be appreciated that in this second embodiment, the axial rigidity of the elastic plate 2 is not necessarily selected at 600 kg/mm to 2200 kg/mm.

It is to be understood that the invention is not to be limited to the embodiments described above, and that various changes and modifications may be made without departing from the spirit and scope of the invention as defined in the appended claims.

What is claimed:

1. A flywheel assembly for a power transmission system for transmitting engine torque to a driven unit, comprising:

an elastic plate secured to a crankshaft to rotate therewith;

a flywheel body secured to said elastic plate and having an engageable surface for engaging with a clutch disc; and

a reinforcing member for reinforcing said elastic plate at a portion of said elastic plate which is secured to said crankshaft;

said elastic plate having an axial rigidity in the range of 600 kg/mm to 2200 kg/mm so as to ensure transmission of engine torque through said flywheel assembly to said driven unit while decreasing noise produced by a bending vibration of said crankshaft;

wherein each of said elastic plate, said flywheel body and said reinforcing member comprises a first portion, said first portion of said flywheel body being placed axially between said first portions of said elastic plate and said reinforcing member, and said first portions of said elastic plate, said flywheel body and said reinforcing member defining clearances for allowing said first portion of said flywheel body to move axially between

said first portions of said elastic plate and said reinforcing member.

2. A flywheel as set forth in claim 1, wherein said axial rigidity is in the range of 600 kg/mm to 1700 kg/mm.

3. A flywheel as set forth in claim 2, wherein an axial run-out of said engageable surface when rotated by said crankshaft is no more than 0.1 mm.

4. A flywheel according to claim 1, wherein said reinforcing member (4) and said elastic plate (2) are fastened to said crankshaft (1) by a fastening means (3), and said elastic plate is clamped between said crankshaft and said reinforcing member.

5. A flywheel according to claim 4, wherein said elastic plate is circular and comprises an outer peripheral portion (2*b*) surrounding said first portion of said elastic plate, so that said first portion of said elastic plate is an inner portion of said elastic plate, said flywheel body comprises an outer peripheral portion (5*a*) which surrounds said first portion of said flywheel body, so that said first portion of said flywheel body is an inner portion of said flywheel body, said outer peripheral portions of said elastic plate and said flywheel body are fastened together by a second fastening means (6), said inner portion of said flywheel body comprises an inwardly facing inside cylindrical surface defining a central circular bole (5*b*), said reinforcing member comprises a cylindrical portion (4*a*) which is received in said circular hole (5*b*) of said flywheel body, and comprises an outwardly facing outside cylindrical surface surrounded by said inwardly facing cylindrical surface of said flywheel body, said first portion of said reinforcing member is in the form of an outward flange (4*b*), said first portion of said flywheel body is slidably mounted on said cylindrical portion of said reinforcing member so that said first portion of said flywheel body is axially slidable between said inner portion of said elastic plate and said outward flange of said reinforcing member.

6. A flywheel according to claim 4, wherein said inner portion of said flywheel body comprises a first surface (5*f*) which is substantially parallel to said engageable surface (5*g*) and which faces toward said elastic plate, and a second surface (5*d*) which is substantially parallel to said engageable surface and which faces toward said outward flange of said reinforcing member, said inner portion of said elastic plate comprising an abutting surface confronting said first surface of said flywheel body and limiting an axial movement of said inner portion of said elastic plate by abutting against said first surface of said flywheel body, said outward flange of said reinforcing member comprises an abutting surface confronting said second surface of said flywheel body and limiting the axial movement of said inner portion of said flywheel body by abutting against said second surface of said flywheel body, an axial distance between said first and second surfaces of said flywheel body is smaller than an axial distance between said abutting surfaces of said elastic member and said reinforcing member.

7. A flywheel according to claim 6, wherein said second surface (5*d*) of said inner portion of said flywheel body is located axially between said first surface (5*f*) and said engageable surface (5*g*) of said flywheel body.

8. A flywheel for a power transmission system for transmitting engine torque to a driven unit, comprising:

an elastic plate secured to a crankshaft to rotate therewith;

a flywheel body secured to said elastic plate and having an engageable surface for engaging with a clutch disc; and

a reinforcing member for reinforcing said elastic plate at a portion of said elastic plate which is secured to said crankshaft; and

said [engageable] surface having an axial run-out which is equal to or less than 0.1 mm;

wherein each of said elastic plate, said flywheel body and said reinforcing member comprises a first portion, said first portion of said flywheel body being placed axially between said first portions of said elastic plate and said reinforcing member, and said first portions of said elastic plate, said flywheel body and said reinforcing member defining clearances for allowing said first portion of said flywheel body to move axially between said first portions of said elastic plate and said reinforcing member.

9. A flywheel assembly comprising:

a driving shaft (1) for transmitting torque;

a circular elastic member (2) comprising an outer portion and an inner portion and extending radially inwardly from said outer portion to said inner portion, said inner portion of said elastic member being fastened to a shaft end of said driving shaft;

an annular flywheel member (5) comprising an outer portion and an inner portion and extending radially inwardly from said outer portion to said inner portion of said flywheel member, said outer portion of said flywheel member being fastened to said outer portion of said elastic member, said inner portion of said flywheel member comprising a central circular hole; and

a reinforcing member (4) comprising a cylindrical portion (4*a*) axially extending from a first end to a second end, an inner portion extending radially inwardly from said first end of said cylindrical portion, and an outward flange (4*b*) extending radially outwardly from said second end of said cylindrical portion, said inner portion of said reinforcing member being fastened to said shaft end of said driving shaft, said cylindrical portion of said reinforcing member being fit in said circular

9. A flywheel assembly comprising:

a crankshaft [driving shaft] (1) for transmitting torque;

a circular elastic plate [member] (2) comprising an outer portion and an inner portion and extending radially inwardly from said outer portion to said inner portion, said inner portion of said elastic plate [member] being fastened to a shaft end of said crankshaft [driving shaft];

an annular flywheel body [member] (5) comprising an outer portion and an inner portion and extending radially inwardly from said outer portion to said inner portion of said flywheel body [member], said outer portion of said flywheel body [member] being fastened to said outer portion of said elastic plate [member], said inner portion of said flywheel body [member] comprising a central circular hole; and

a reinforcing member (4) comprising a cylindrical portion (4a) axially extending from a first member end to a second member end, an inner portion extending radially inwardly from said first member end of said cylindrical portion, and an outward flange (4b) extending radially outwardly from said second member end of said cylindrical portion, said inner portion of said reinforcing member being fastened to said shaft end of said crankshaft [driving

shaft], said cylindrical portion of said reinforcing member being fit in said circular hold of said flywheel body [member] with a clearance to form a loose fit;

wherein said inner portion of said elastic plate [member] is fixedly clamped between said shaft end of said crankshaft [driving shaft] and said inner portion of said reinforcing member, said inner portion of said flywheel body [member] is [loosely] fit over said cylindrical portion of said reinforcing member and located axially between said inner portion of said elastic plate [member] and said outward flange of said reinforcing member, said outward flange is axially spaced from said inner portion of said elastic plate [member] at an axial distance which allows axial movement of said inner portion of said flywheel body between said inner portion of said elastic plate [member] and said outward flange of said reinforcing member.

10. A flywheel assembly according to claim 9 [3], wherein said elastic plate [member] has an axial rigidity which is in the range of 600 kg/mm to 2200 kg/mm.

11. A flywheel assembly according to claim 9, wherein a wall thickness of said inner portion of said reinforcing member is greater than a wall thickness of each of said

outward flange[s] of said reinforcing member and said inner portion of said elastic plate [member], said wall thickness of each of said inner portion and said outward flange of said reinforcing member and said inner portion of said elastic plate [member] being a dimension measured in an axial direction parallel to an axis of said crankshaft [driving shaft].

12. A flywheel assembly according to claim 9, further comprising a first fastening means for fastening said outer portions of said elastic plate [member] and said flywheel body [member] together, and a second fastening means for fastening said inner portions of said elastic plate [member] and said reinforcing member to said shaft end of said crankshaft [driving shaft], each of said first and second fastening means comprises screw fasteners extending axially along an axis of said crankshaft [driving shaft].

13. A flywheel assembly for a power transmission system for transmitting engine torque, comprising:

an elastic plate secured to a crankshaft to rotate therewith;

a flywheel body secured to said elastic plate and having an engaging surface for engaging with a clutch disc;

and

a reinforcing member for reinforcing said elastic plate at a portion of said elastic plate which is secured to said crankshaft;

said elastic plate having an axial rigidity in the range of 600 kg/mm to 2200 kg/mm so as to ensure transmission of engine torque through said flywheel assembly, while decreasing noise produced by a bending vibration of said crankshaft;

wherein said elastic plate is clamped axially between said reinforcing member and a shaft end of said crankshaft, said flywheel body comprises a central hole, and said reinforcing member is received concentrically in said central hole with a clearance allowing said flywheel body to move axially relative to said reinforcing member during operation.

14. A flywheel assembly for a power transmission system for transmitting engine torque, comprising:

an elastic plate secured to a crankshaft to rotate therewith;

a flywheel body secured to said elastic plate and having an engaging surface for engaging with a clutch disc; and

a reinforcing member for reinforcing said elastic plate at a portion of said elastic plate which is secured to said crankshaft;

said engaging surface having an axial run-out which is equal to or less than 0.1 mm;

wherein said elastic plate is clamped axially between said reinforcing member and a shaft end of said crankshaft, said flywheel body comprises a central hole, and said reinforcing member is received concentrically in said central hole with a clearance allowing said flywheel body to move axially relative to said reinforcing member during operation.

15. A flywheel assembly comprising:

a crankshaft (1) for transmitting torque;

a circular elastic plate (2) comprising an outer portion and an inner portion and extending radially inwardly from said outer portion to said inner portion, said inner portion of said elastic plate being fastened to a shaft end of said crankshaft;

an annular flywheel body (5) comprising an outer portion and an inner portion and extending radially inwardly from said outer portion to said inner portion of said flywheel body, said outer portion of said flywheel body

being fastened to said outer portion of said elastic plate, said inner portion of said flywheel body comprising a central circular hole; and

a reinforcing member (4) comprising a cylindrical portion (4a) axially extending from a first member end to a second member end, an inner portion extending radially inwardly from said first end of said cylindrical portion, said inner portion of said reinforcing member being fastened to said shaft end of said crankshaft, said cylindrical portion of said reinforcing member being fit in said circular hole of said flywheel body with a clearance to form a fit;

wherein said inner portion of said elastic plate is fixedly clamped between said shaft end of said driving shaft and said inner portion of said reinforcing member, said inner portion of said flywheel body is fit over said cylindrical portion of said reinforcing member, and said reinforcing member allows axial movement of said inner portion of said flywheel body relative to said inner portions of said elastic plate and said reinforcing member.

16. A flywheel assembly for a power transmission system for transmitting engine torque, comprising:

a crankshaft;

an elastic plate comprising an inner portion secured to a shaft end of said crankshaft;

a flywheel body secured to said elastic plate and having an engaging surface for engaging with a clutch disc; and

a reinforcing member for reinforcing said elastic plate at said inner portion of said elastic plate;

wherein said elastic plate has an axial rigidity in the range of 600 kg/mm to 2200 kg/mm so as to ensure transmission of engine torque through said flywheel assembly, while decreasing noise produced by a bending vibration of said crankshaft; and

wherein said elastic plate is clamped axially between said reinforcing member and said shaft end of said crankshaft.

17. A flywheel assembly as set forth in Claim 16, wherein said flywheel body comprises an inner portion defining a circular central hole, and an outer portion surrounding said inner portion of said flywheel body; said elastic plate comprises an outer portion which surrounds said inner portion of said elastic plate and which is fixed to said outer portion of said flywheel body; said reinforcing member is fit in said central hole of said

flywheel body with a clearance to form a loose fit; and said reinforcing member comprises an outer circumferential surface for allowing said inner portion of said flywheel body to move axially to said elastic plate without limiting an axial movement of the inner potion of said flywheel body toward said elastic plate.

18. A flywheel assembly as set forth in Claim 17, wherein said reinforcing member extends axially from a first member end defined by a radially extending abutment surface held in contact with said elastic plate, to a second member end; said outer circumferential surface of said reinforcing member extends from said abutment surface toward said second member end of said reinforcing member; said outer circumferential surface of said reinforcing member comprises an outer cylindrical surface section fit in said central hole of said flywheel body, and an outer curved surface section which extends continuously from said outer cylindrical surface section to said abutment surface; and said curved surface section is a surface of revolution whose diameter decreases continuously from a diameter of said cylindrical surface section toward said abutment surface.

19. A flywheel assembly as set forth in Claim 18,

wherein said flywheel body comprises a side surface facing toward said elastic plate, and said engaging surface which faces away from said elastic plate and which extends in an imaginary flat plane; and said second member end of said reinforcing member is located axially between said engaging surface and said side surface of said flywheel body and away from said imaginary flat plane.

20. A flywheel assembly as set forth in Claim 16, wherein said flywheel body comprises an inner portion defining a circular central hole, and an outer portion surrounding said inner portion of said flywheel body; said elastic plate comprises an outer portion which surrounds said inner portion of said elastic plate and which is fixed to said outer portion of said flywheel body; and said reinforcing member comprises an outer circumferential surface allowing said inner portion of said flywheel body to move axially toward said elastic plate without limiting an axial movement of the inner portion of said flywheel body toward said elastic plate.

21. A flywheel assembly as set forth in Claim 16, wherein said flywheel body comprises a side surface facing toward said elastic plate, and said engaging surface which

faces away from said elastic plate; and said reinforcing member comprises a radially extending abutment surface held in contact with said elastic plate, and an outer circumferential curved surface which extends continuously from said abutment surface to a curved surface end which is located axially between said side surface of said flywheel body and said engaging surface of said flywheel body.

22. A flywheel assembly as set forth in Claim 21, wherein said outer circumferential curved surface of said reinforcing member is a surface of revolution whose diameter increases continuously from said abutment surface of said reinforcing member to said curved surface end of said outer circumferential curved surface.

23. A flywheel assembly as set forth in Claim 21, wherein said reinforcing member extends axially from a first member end defined by said abutment surface to a second member end which is located axially between said engaging surface and said side surface of said flywheel body; and an axial distance of said second member end of said reinforcing member from said abutment surface of said reinforcing member is smaller than an axial distance of said engaging surface of said flywheel body from said abutment surface of said

reinforcing member.

24. A flywheel assembly as set forth in Claim 21, wherein said engaging surface of said flywheel body extends in an imaginary flat plane; and said reinforcing member extends axially from a first member end defined by said abutment surface to a second member end which is located axially between said engaging surface and said side surface of said flywheel body and which is away from said imaginary flat plane.

25. A flywheel assembly as set forth in Claim 24, wherein said flywheel body comprises an inner portion defining a circular central hole, and an outer portion surrounding said inner portion of said flywheel body; said elastic plate comprises an outer portion which surrounds said inner portion of said elastic plate and which is fixed to said outer portion of said flywheel body; said reinforcing member comprises a received portion which is received in said central hole of said flywheel body; and said outer curved surface of said reinforcing member extends continuously from said abutment surface to said received portion.

26. A flywheel assembly as set forth in Claim 25, wherein said received portion of said reinforcing member comprises a cylindrical outside surface received in said central hole of said flywheel body, and the diameter of said curved surface increases continuously from said abutment surface to a diameter of said cylindrical surface of said reinforcing member.

27. A flywheel assembly as set forth in Claim 24, wherein said axial rigidity is in the range of 600 kg/mm to 1700 kg/mm.

28. A flywheel assembly as set forth in Claim 24, wherein an axial run-out of said engaging surface when rotated by said crankshaft is no more than 0.1 mm.

29. A flywheel assembly as set forth in Claim 28, wherein said engaging surface of said flywheel body is formed so as to make the axial run-out no more than 0.1 mm by processing said engaging surface of said flywheel body in an assembled state in which said crankshaft, said elastic plate, said flywheel body and said reinforcing member are assembled in a unit.

30. A flywheel assembly as set forth in Claim 24, wherein said side surface of said flywheel body comprises an outer side surface section which faces toward said elastic plate and which is fastened to an outer portion of said elastic plate and an inner side surface section which faces toward said elastic plate, which is surrounded by said outer side surface section of said flywheel body, and which is raised from said outer side surface section axially toward said elastic plate.

31. A flywheel assembly for a power transmission system for transmitting engine torque to a driven unit, comprising:

a crankshaft;

an elastic plate comprising an inner portion secured to a shaft end of said crankshaft;

a flywheel body secured to said elastic plate and having an engaging surface for engaging with a clutch disc; and

a reinforcing member for reinforcing said elastic plate at said inner portion of said elastic plate;

wherein said engaging surface has an axial run-out which is no more than 0.1 mm; and

wherein said elastic plate is clamped between said

reinforcing member and said shaft end of said crankshaft.

32. A flywheel assembly as claimed in Claim 31, wherein said flywheel body comprises an inner portion defining a circular central hole, and an outer portion surrounding said inner portion of said flywheel body; said elastic plate comprises an outer portion which surrounds said inner portion of said elastic plate and which is fixed to said outer portion of said flywheel body; said reinforcing member is fit in said central hole of said flywheel body with a clearance to form a loose fit; and said reinforcing member comprises an outer circumferential surface for allowing said inner portion of said flywheel body to move axially to said elastic plate without limiting an axial movement of the inner potion of said flywheel body toward said elastic plate.

33. A flywheel assembly as set forth in Claim 32, wherein said reinforcing member extends axially from a first member end defined by a radially extending abutment surface held in contact with said elastic plate, to a second member end; said outer circumferential surface of said reinforcing member extends continuously from said abutment surface toward said second member end of said reinforcing member;

said outer circumferential surface of said reinforcing member comprises an outer cylindrical surface section fit in said central hole of said flywheel body, and an outer curved surface section which extends continuously from said outer cylindrical surface section to said abutment surface; and said curved surface section is a surface of revolution whose diameter decreases from a diameter of said cylindrical surface section toward said abutment surface.

34. A flywheel assembly as set forth in Claim 33, wherein said flywheel body comprises a side surface facing toward said elastic plate, and said engaging surface which faces away from said elastic plate and which extends in an imaginary flat plane; and said second member end of said reinforcing member is located axially between said engaging surface and said side surface of said flywheel body and away from said imaginary flat plane.

35. A flywheel assembly as set forth in Claim 31, wherein said flywheel body comprises an inner portion defining a circular central hole, and an outer portion surrounding said inner portion of said flywheel body; said elastic plate comprises an outer portion which surrounds said inner portion of said elastic plate and which is fixed

to said outer portion of said flywheel body; and said reinforcing member comprises an outer circumferential surface allowing said inner portion of said flywheel body to move axially toward said elastic plate without limiting an axial movement of the inner potion of said flywheel body toward said elastic plate.

36. A flywheel assembly as set forth in Claim 31, wherein said flywheel body comprises a side surface facing toward said elastic plate, and said engaging surface which faces away from said elastic plate; and said reinforcing member comprises a radially extending abutment surface held in contact with said elastic plate, and an outer circumferential curved surface which extends continuously from said abutment surface to a curved surface end which is located axially between said side surface of said flywheel body and said engaging surface of said flywheel body.

37. A flywheel assembly as set forth in Claim 36, wherein said outer circumferential curved surface of said reinforcing member is a surface of revolution whose diameter increases from said abutment surface of said reinforcing member to said curved surface end of said outer circumferential curved surface.

38. A flywheel assembly as set forth in Claim 36, wherein said reinforcing member extends axially from a first member end defined by said abutment surface to a second member end which is located axially between said engaging surface and said side surface of said flywheel body; and an axial distance of said second member end of said reinforcing member from said abutment surface of said reinforcing member is smaller than an axial distance of said engagement surface of said flywheel body from said abutment surface of said reinforcing member.

39. A flywheel assembly as set forth in Claim 36, wherein said engaging surface of said flywheel body extends in an imaginary flat plane; and said reinforcing member extends axially from a first member end defined by said abutment surface to a second member end which is located axially between said engaging surface and said side surface of said flywheel body and which is away from said imaginary flat plane.

40. A flywheel assembly as set forth in Claim 39, wherein said flywheel body comprises an inner portion defining a circular central hole, and an outer portion surrounding said inner portion of said flywheel body; said

elastic plate comprises an outer portion which surrounds said inner portion of said elastic plate and which is fixed to said outer portion of said flywheel body; said reinforcing member comprises a received portion which is received in said central hole of said flywheel body; and said outer curved surface of said reinforcing member extends continuously from said abutment surface to said received portion.

41. A flywheel assembly as set forth in Claim 40, wherein said received portion of said reinforcing member comprises a cylindrical outside surface received in said central hole of said flywheel body, and the diameter of said curved surface increases continuously from said abutment surface to a diameter of said cylindrical surface of said reinforcing member.

42. A flywheel assembly as set forth in Claim 39, wherein said engaging surface of said flywheel body is formed so as to make the axial run-out no more than 0.1 mm by processing said engaging surface of said flywheel body in an assembled state in which said crankshaft, said elastic plate, said flywheel body and said reinforcing member are assembled in a unit.

43. A flywheel assembly as set forth in Claim 16, wherein said reinforcing member comprises an abutment surface facing in a first axial direction along said crankshaft and extending in a radial direction perpendicular to said first axial direction, said inner portion of said elastic plate comprises a first side surface facing in said first axial direction and extending in said radial direction and a second side surface facing in a second axial direction opposite to said first axial direction and extending in said radial direction, said shaft end of said crankshaft comprises a shaft end surface facing in said second axial direction and extending in said radial direction, said abutment surface of said reinforcing member is in contact with said second side surface of said inner portion of said elastic plate, said first side surface of said inner portion of said elastic plate is in contact with said shaft end surface of said crankshaft, and said first and second side surfaces of said elastic plate are located between said abutment surface of said reinforcing member and said shaft end surface of said crankshaft.

44. A flywheel assembly as set forth in Claim 31, wherein said reinforcing member comprises an abutment surface facing in a first axial direction along said

crankshaft and extending in a radial direction perpendicular to said first axial direction, said inner portion of said elastic plate comprises a first side surface facing in said first axial direction and extending in said radial direction and a second side surface facing in a second axial direction opposite to said first axial direction and extending in said radial direction, said shaft end of said crankshaft comprises a shaft end surface facing in said second axial direction and extending in said radial direction, said abutment surface of said reinforcing member is in contact with said second side surface of said inner portion of said elastic plate, said first side surface of said inner portion of said elastic plate is in contact with said shaft end surface of said crankshaft, and said first and second side surfaces of said elastic plate are located between said abutment surface of said reinforcing member and said shaft end surface of said crankshaft.

45. A flywheel assembly as set forth in Claim 16, wherein said reinforcing member comprises a bolt hole, said elastic plate comprises a bolt hole, said elastic plate is clamped between said reinforcing member and said shaft end of said crankshaft by a bolt passing through said bolt holes of said reinforcing member and said elastic plate, said bolt

hole of said elastic plate is located between said bolt hole of said reinforcing member and said shaft end of said crankshaft.

46. A flywheel assembly as set forth in Claim 31, wherein said reinforcing member comprises a bolt hole, said elastic plate comprises a bolt hole, said elastic plate is clamped between said reinforcing member and said shaft end of said crankshaft by a bolt passing through said bolt holes of said reinforcing member and said elastic plate, said bolt hole of said elastic plate is located between said bolt hole of said reinforcing member and said shaft end of said crankshaft.